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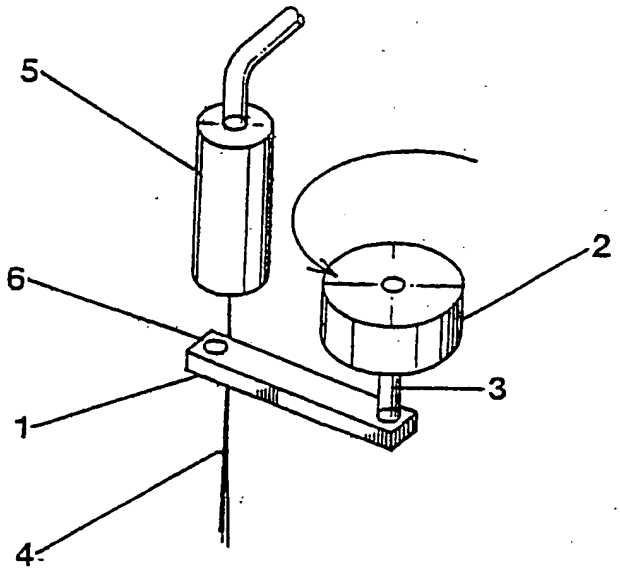

(57) Abstract

A valve for controlling liquid-jet cutting, especially of food products, such as fish fillets, comprises a plate (1) and a motor shaft (3) connected thereto. The plate is, by means of the motor (2), positionable in and removable from the path of the liquid jet (4) used in the cutting operation.

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POSITIONABLE PLATE USED AS A VALVE FOR CONTROLLING LIQUID-JET CUTTING

The present invention relates to a valve for liquid-jet cutting.

There exist several prior-art valves for controlling liquid-jet cutting of various products, especially food products such as fish fillets which are to be trimmed. A common disadvantage of such valves is the comparatively long reaction time for opening and closing, which is due to the valves being of flow-through type comprising a valve housing, a valve member, a valve seat, seals that should be able to withstand high pressures, as well as associated operating means. Further, the prior-art valves are relatively heavy, just because they include many components that should be able to withstand high pressures. Thus, the relatively high weight of the valves gives a fairly poor cutting capacity to the robot on which the valve is mounted and which serves to move the valve for performing a cutting operation e.g. for removing bones from fillets.

The object of the invention is to provide a valve for liquid-jet cutting which obviates the above inconveniences inherent in such valves.

According to the invention, this object is achieved by a valve which is characterised in that it comprises a plate and a motor shaft connected thereto, said plate being, by means of the motor, positionable in and removable from the path of the liquid jet used for the cutting operation, the motor being adapted to be fixed on a stand.

An embodiment of the invention will be described in more detail below with reference to the accompanying drawing, in which

Fig. 1 shows the valve in open position, and

Fig. 2 shows the valve in closed position.

The illustrated valve consists of a bar-shaped plate 1 and an operating means for the plate, in this case a pneumatic rotary cylinder 2 whose shaft 3 is connected to one end of the plate 1. The rotary cylinder is fixedly mounted on a stand (not shown) so as to be able to pivot the other end of the plate 1 into the path of a liquid jet 4 sprayed from a nozzle 5 towards a product-cutting table or conveyor (not shown).

The motor is connected in conventional manner to means for controlling the motor or the robot in response to signals from a camera, a UV or IR detector or other detector monitoring the product to be cut on the table or the conveyor (see e.g. SE 8303327-4).

At the plate end hit by the liquid jet, there is provided an insert 6 made of some hard material, such as sapphire, for increasing the service life of the plate 1.

It will be appreciated that this arrangement enables the jet to be shut off and let through in a considerably shorter time than in conventional valves. The fact that the liquid jet is constantly on is of minor importance compared with the increase in cutting capacity. For comparative purposes, it may be mentioned that the opening and closing times of prior-art valves are about 0.8 s, while they can be reduced to about 0.2 s with the present invention.

It will be understood that patterns of movement other than a pivotal movement can be imparted to the plate. Thus, the plate may be translationally moved in its longitudinal direction to and from the jet by means of a piston-cylinder unit.

CLAIMS

1. A valve for controlling liquid-jet cutting, c h a r a c t e r i s e d in that it comprises a plate (1) and a motor shaft (3) connected thereto, said plate being, by means of the motor (2), positionable in and removable from the path of the liquid jet (4) used for the cutting operation.

2. A valve as set forth in claim 1, c h a r a c - t e r i s e d in that the motor (2) is a rotary cylinder e.g. of pneumatic type.

3. A valve as set forth in claim 1 or 2, c h a - r a c t e r i s e d in that the impact area of the jet (4) on the plate (1) comprises an insert (6) made of a comparatively hard material, such as sapphire.

FIG.1

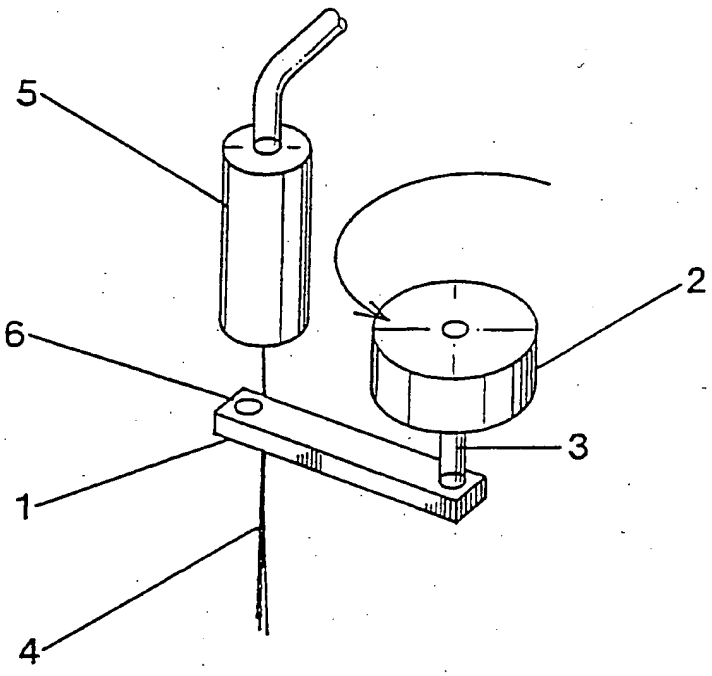

FIG.2